Autonomous Persistent Tactical Surveillance

ONR Program Code 31 — November 2010

At a Glance

What is it?

- New research program that seeks to provide the tactical user with timely access to mission-relevant data products as well as optimize sensor tasking based on the value of information to the mission

How does it work?

- The program will develop algorithms and services for sensor management that can optimize the value of information that is produced by the sensors in the context of the mission.
- The program will also develop techniques that enable the system to evaluate the quality and sufficiency of the collected information both to support context aware models over large areas of interest to the project and to predict the value of particular information to the warfighting units.

What will it accomplish?

- Efficient discovery and production of highly valuable information to the warfighter in advance of when it is needed
- Maturation of science and technology through detailed experimentation

Point of Contact

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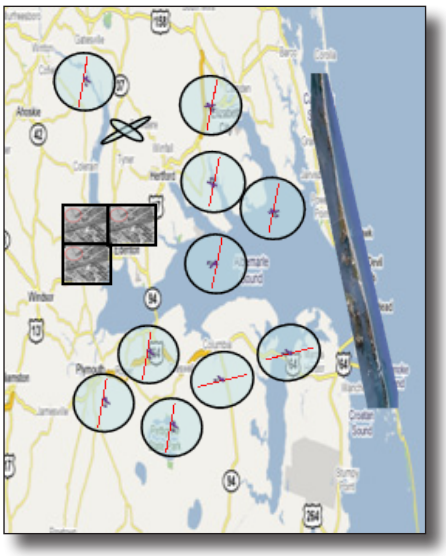
This applied research initiative will develop and mature technologies to manage sensors, processing and communications to produce timely, highly valued information that is relevant to the mission being conducted.



Surveillance Assets

Autonomous persistent tactical surveillance is focused on producing timely required information. The program has three thrusts: mobile autonomous Intelligence, Surveillance, Reconnaissance (ISR) to C2 synchronization, autonomous information-based surveillance control, and contextual enterprise information. Each thrust will mature and develop technologies that enable the production of information that is timely and complete as defined by the mission.

Mobile autonomous ISR to C2 synchronization will enable a capability to predict the value of, and supply, information supporting agile and tactical warfighting units, while optimizing the use of organic sensing and analysis capabilities in conjunction with enterprise sources.

Autonomous information-based surveillance control will provide capabilities to semantically model and geospatially represent what is known and what needs to be known so that sensor managers can task sensors to areas where the value of information, measured as a difference between what needs to be known and what is known, is the highest.

Contextual enterprise information expands the discovery of sensors and data as well as the discovery and production of information to the theater and national levels while simultaneously synchronizing the enterprise and tactical data stores.

The program will conduct a series of experiments in an increasingly relevant environment to demonstrate progress toward program technical and capability goals. An open architecture will allow new services to work well with existing programs of record.

Research Challenges and Opportunities:

- Semantic representation of the situational value of information
- Semantic representation of knowledge relative to possible information needs
- Value-driven sensor planning and management
- Strategic and tactical data, information and knowledge fusion
- Reasoning about the value of information across domains
- Efficient production of valued information across an enterprise